DSR®1021/1022 Switch

Installer/User Guide

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USA Notification

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment is a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense.

Japanese Approvals

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Safety and EMC Standards

UL, FCC, cUL, ICES-003, CE, GS, VCCI, MIC, C-Tick, GOST

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CHAPTER 1

Product Overview

Features and Benefits

Avocent DSR® switches combine analog and digital technology to provide flexible, centralized control of data center servers and facilitate the OA&M (operations, activation and maintenance) of remote branch offices where trained operators may be unavailable. They provide enterprise customers with a significant reduction of cable volume, secure remote access and flexible server management from anywhere at anytime.

Each DSR switch model consists of a rack mountable keyboard, video and mouse (KVM) switch, configurable for analog (local) or digital (remote) connectivity. Video resolutions are supported up to 1280 x 1024 for remote users. Enhanced video quality of up to 1600 x 1200 is available to local users via the video port.

The DSR switch has user peripheral ports for PS/2 keyboards and mice and an SPC port that may be used to connect to an SPC power control device. An SPC device is an 8- or 16-outlet device that can be used to control the power state of any attached target devices using the DS software.

Users can access target devices across a 100BaseT LAN port that is used to establish an Ethernet connection, or directly through a local port. Each DSR switch model includes a MODEM port that supports V.34, V.90 or V.92-compatible modems that may be used to access the switch when an Ethernet connection is not available.

The only significant difference between the two models described in this manual is that the DSR1021 supports control of up to eight target devices, while the DSR1022 supports control of up to four target devices.

The IP-based DSR switches give you flexible target device management control from anywhere in the world.

Reduce cable bulk

With server densities continually increasing, cable bulk remains a major concern for network administrators.The DSR switches significantly reduce KVM cable volume in the rack by utilizing the innovative DSRIQ module and single, industry-standard Unshielded Twisted Pair (UTP) CAT 5 cabling. This allows a higher server density while providing greater airflow and cooling capacity.

The DSRIQ module is powered directly from the target device and provides Keep Alive functionality when the DSR1021/1022 switch is not powered.

The DSRIQ-SRL (serial) module is a DCE device that provides the primary interface between a serial device and a DSR1021/1022 switch. It provides VT100 terminal emulation, break suppression and port history in a compact, convenient module.

Access the DSR1021/1022 switch via network connection

No special software or drivers are required on the attached, or client, computers.

NOTE: The client connects to the server housing the DSView® management software using an Internet browser. For modem access, you must install DSR Remote Operations software included on the DSView software CD-ROM (see the DSView Installer/User Guide for more information).

Users access the DSR1021/1022 switch and all attached systems via Ethernet or using a V.34, V.90 or V.92 modem from a client computer, such as a PC. Clients can be located anywhere a valid network connection exists.

Simple access to any target device

When a user accesses the DSView Server software, a listing of all target devices to which the user has permission to view and manage is displayed. When a user selects a target device from the list, the video of the selected target device is displayed in a Video Viewer window.

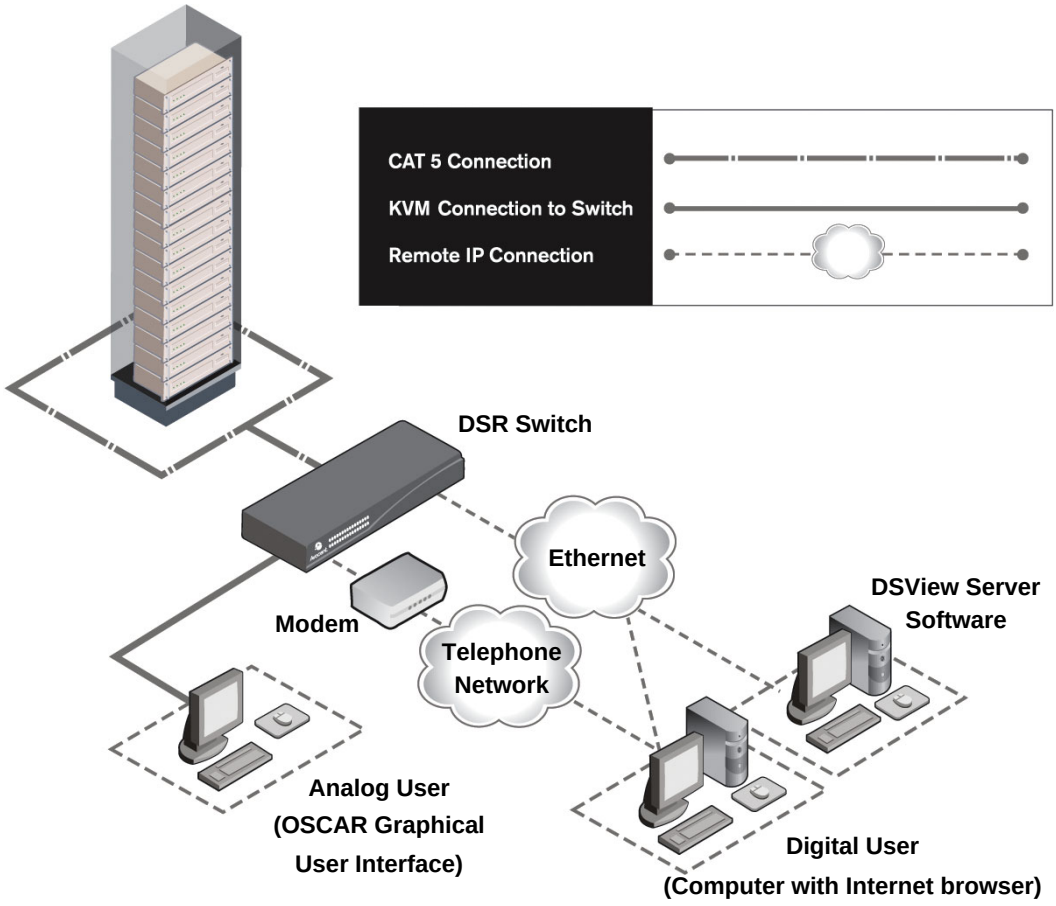

Figure 1.1: Example DSR1021/1022 Switch Configuration

DSR1021 Switch

Number of target devices	8
Digital paths	1
Analog user	1

Figure 1.2: The DSR1021 Switch

DSR1022 Switch

Number of target devices	4
Digital paths	1
Analog user	1

Figure 1.3: The DSR1022 Switch

Safety Precautions

To avoid potential video and/or keyboard problems when using Avocent products:

- If the building has 3-phase AC power, ensure that the computer and monitor are on the same phase. For best results, they should be on the same circuit.

To avoid potentially fatal shock hazard and possible damage to equipment, please observe the following precautions:

- Do not use a 2-wire power cord in any Avocent product configuration.
- Test AC outlets at the target device and monitor for proper polarity and grounding.
- Use only with grounded outlets at both the target device and monitor. When using a backup Uninterruptible Power Supply (UPS), power the target device, the monitor and the DSR switch from the UPS.

NOTE: The AC inlet is the main power disconnect.

Rack mount safety considerations

- Elevated Ambient Temperature: If installed in a closed rack assembly, the operating temperature of the rack environment may be greater than room ambient. Use care not to exceed the rated maximum ambient temperature of the switch.
- Reduced Air Flow: Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
- Mechanical Loading: Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Consider equipment nameplate ratings for maximum current.
- Reliable Earthing: Reliable earthing of rack mounted equipment should be maintained. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

CHAPTER 2

Installation

The DSR switching system requires connectivity to a server running the DSView Server software. DSView software allows a user to view and control target devices (one at a time) attached to the DSR switching system. For more information on the DSView software, see the DSView Installer/User Guide.

The DSR switching system transmits keyboard, video and mouse (KVM) information between operators and target devices attached to the DSR switch over a network using either an Ethernet connection or a modem connection.

The DSR1021/1022 switch uses TCP/IP for communication over Ethernet. Although 10BaseT Ethernet may be used, Avocent recommends a dedicated, switched 100BaseT network.

The DSR1021/1022 switch uses the Point-to-Point Protocol (PPP) for communication over a V.34, V.90 or V.92 modem.

Installation Overview

The general procedure for setting up and installing the DSR switch is as follows:

- Unpack the DSR switch and verify that all components are present and in good condition. See the *Getting Started* section in this chapter.
- Make all hardware connections between the power source, DSR switch, target devices, optional SPC device, the Ethernet and the optional modem connection. See the *Connecting the DSR Switch Hardware* section.
- Turn on the power and verify that all connections are working. See the *Verifying the Connections* section.
- If you are configuring the DSR switch using the console menu interface, do that at this point. See Chapter 4 for more information.
- Use the DSView Server software to configure the DSR switch. See the DSView Installer/User Guide for detailed instructions.
- Make the appropriate mouse setting adjustments. See the *Adjusting mouse settings on target devices* section.

The following diagram illustrates one possible configuration for your DSR1021/1022 switch.

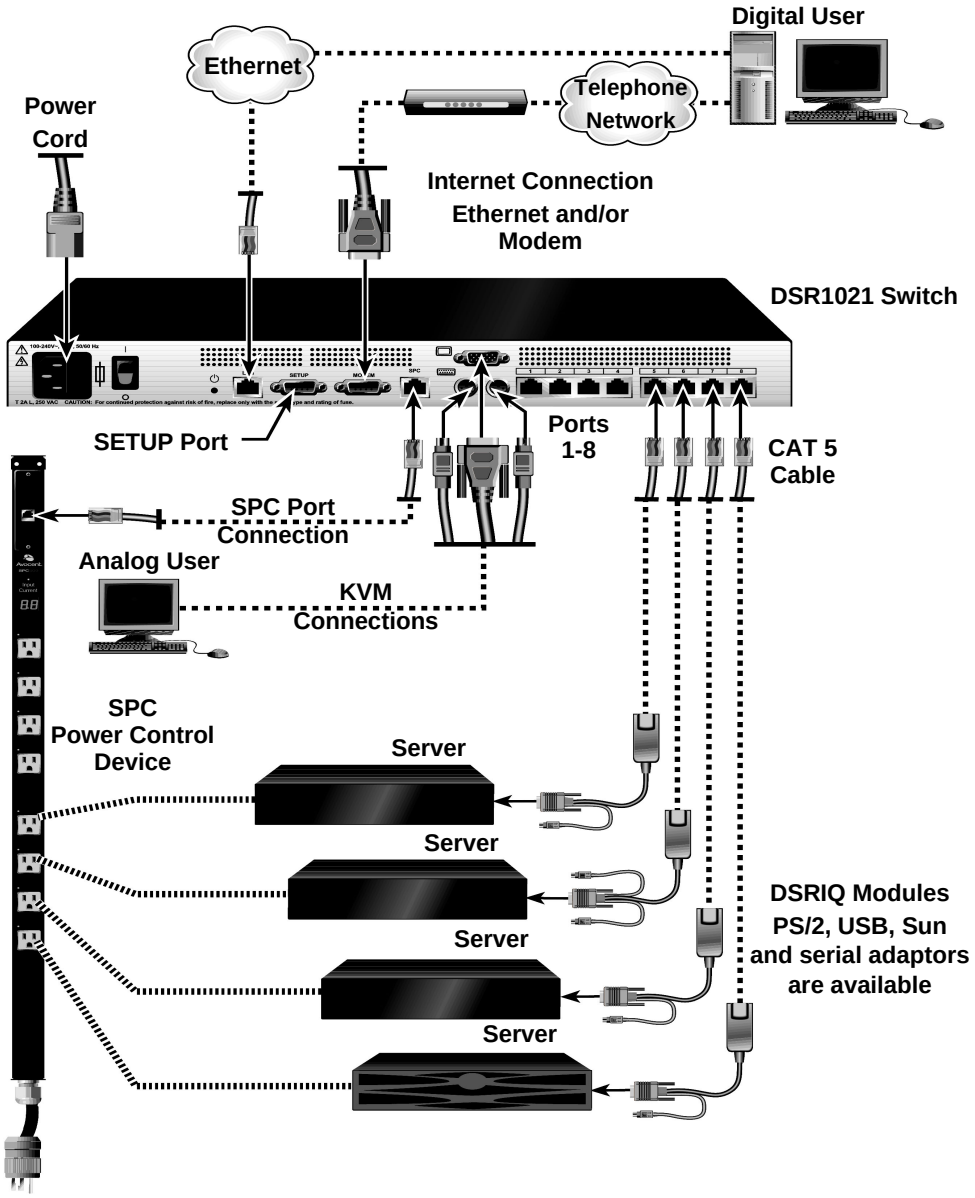

Figure 2.1: Basic DSR1021 Switch Configuration

Setting up your network

The DSR switching system uses IP addresses to uniquely identify the switch and the target devices. The DSR1021/1022 switch supports both Dynamic Host Configuration Protocol (DHCP) and static IP addressing. Avocent recommends that IP addresses be reserved for each switch and that they remain static while the DSR switches are connected to the network. For additional information on setting up the DSR switch using the DSView Server software, and for information on how the DSR switch uses TCP/IP, see the DSView Installer/User Guide.

Getting Started

Before installing your DSR1021/1022 switch, refer to the following lists to ensure you have all items that shipped with the DSR1021/1022 switch, as well as other items necessary for proper installation.

Supplied with the DSR1021/1022 switch

- Local country power cord
- Rack mounting brackets
- Null modem cable
- DSR1021/1022 Installer/User Guide (this manual)
- DSR1021/1022 Quick Installation Guide

Additional items needed

- One DSRIQ module per target server or DSRIQ-SRL module per serial device
- One CAT 5 patch cable per DSRIQ module (4-pair UTP, up to 10 meters)
- One CAT 5 patch cable for network connectivity (4-pair UTP, up to 10 meters)
- DSView software
- (Optional) V.34, V.90 or V.92-compatible modem and cables
- (Optional) SPC power control device

Connecting the DSR Switch Hardware

NOTE: The DSR1021/1022 switch may be rack mounted in a 1U configuration. The DSR1021/1022 switch does not support a 0U configuration.

To connect and power up your DSR1021/1022 switch:

1. Power down the target device(s) that will be part of your DSR switching system. Locate the power cord that came with the DSR1021/1022 switch. Plug one end into the power socket on the rear of the DSR1021/1022 switch. Plug the other end into an appropriate AC wall outlet.

WARNING: To reduce the risk of electric shock or damage to your equipment:
- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) outlet that is easily accessible at all times.
- Disconnect the power from the switch by unplugging the power cord from either the electrical outlet or the appliance.

2. Plug your VGA monitor and PS/2 keyboard and mouse cables into appropriately labeled DSR1021/1022 switch ports. You must install both a keyboard and mouse on the local port or the keyboard will not initialize properly.
3. Choose an available numbered port on the rear of your DSR1021/1022 switch. Plug one end of a CAT 5 patch cable (4-pair, up to 10 meters) into the selected port and plug the other end into the RJ-45 connector of a DSRIQ module.
4. Plug the DSRIQ module into the appropriate ports on the back of the target server. Repeat this procedure for all servers that are to be connected to the DSR1021/1022 switch. See *To connect a DSRIQ module to a server* and *To connect a DSRIQ module to a serial device* for more information.
5. Plug a CAT 5 patch cable from your Ethernet network into the LAN port on the back of your DSR1021/1022 switch. Network users will access the DSR switch through this port.
6. (Optional) The DSR1021/1022 switch may also be accessed using a ITU V.92, V.90 or V.34-compatible modem. Plug the 9-pin serial cable into the MODEM port on the back of your DSR1021/1022 switch. Plug the other end into the connector on the modem.

NOTE: Using a modem connection instead of a LAN connection will limit the performance capability of your DSR1021/1022 switch.

7. (Optional) Plug one end of the cable supplied with the SPC power control device into the SPC port on the DSR1021/1022 switch and plug the other end into an SPC device. Plug the power cords from the target servers into the SPC device power outlets. Plug the SPC device into an appropriate AC wall outlet. Plug the SPC device into an appropriate AC wall outlet.
8. If you will be configuring the DSR switch using the console menu interface, connect a terminal or PC running terminal emulation software (such as HyperTerminal®) to the SETUP port on the back panel of the DSR1021/1022 switch using the supplied null modem cable. The terminal should be set to 9600 bits per second (bps), 8 bits, 1 stop bit, no parity and no flow control. Otherwise, proceed to the next step.

9. Power up each target device and then power up the DSR1021/1022 switch. After approximately one minute, the switch completes initialization and displays the OSCAR® graphical user interface *Free* tag on the local port monitor.
10. Use the DSView software to configure the switch. See the DSView Installer/User Guide for detailed instructions.

To connect a DSRIQ module to a server:

1. Attach the appropriately color-coded connectors of a DSRIQ module to the keyboard, monitor and mouse ports on the server you will be connecting to this DSR1021/1022 switch.
2. Attach one end of the CAT 5 patch cable to the RJ-45 connector on the DSRIQ module. Connect the other end of the CAT 5 patch cable to the desired port on the back of your DSR1021/1022 switch.
3. Repeat this procedure for all servers you wish to attach.

NOTE: When connecting a Sun DSRIQ module, you must use a multi-sync monitor in the local port to accommodate Sun computers that support both VGA and sync-on-green or composite sync.

To connect a DSRIQ module to a serial device:

1. Attach the DSRIQ-SRL module 9-pin serial connector to the serial port of the device to be connected to your DSR1021/1022 switch.
2. Attach one end of the CAT 5 patch cable to the RJ-45 connector on the DSRIQ-SRL module. Connect the other end of the CAT 5 patch cable to the desired port on the back of your DSR1021/1022 switch.

NOTE: The DSRIQ-SRL module is a DCE device and only supports VT100 terminal emulation.

3. Connect the power supply to the power connector on your DSRIQ-SRL module. The cable expander can be used to power up to four DSRIQ-SRL modules from a single power supply.
4. Connect the DSRIQ-SRL module power supply to an appropriate AC wall outlet. Power up your serial device. See *Appendix C* for more information on DSRIQ-SRL modules.

Verifying the Connections

DSR switch

The front panel of the DSR1021/1022 switch features two LEDs indicating the Ethernet connection. The top green LED is the *Link* indicator. It will illuminate when a valid connection to the network is established and blink when there is activity on the port. The lower amber LED, labeled *100M*, will indicate that you are communicating at the 100 Mbps rate when using an Ethernet connection.

Additionally, there are two LEDs above each port number on the front of your DSR1021/1022 switch to indicate the target device status: one green and one amber. The green LED will illuminate when the attached target device is powered. The amber LED will illuminate when that port is selected.

DSRIQ modules

PS/2, Sun and USB DSRIQ modules are available for attaching computers to your DSR switch.

The DSRIQ-SRL serial module is used to connect serial devices to your DSR switch and features two green LEDs: a *POWER* LED and a *STATUS* LED. The *POWER* LED indicates that the attached DSRIQ-SRL is powered. The *STATUS* LED indicates that a valid selection has been made to a DSR switch. The DSRIQ-SRL module prevents a serial break from the attached device if the module loses power. However, a user can generate a serial break with the attached device by pressing **Alt-B** after accessing the Terminal Applications menu.

Configuring DSView Software and Adjusting Mouse Settings

Setting up the DSView software

See the DSView Installer/User Guide that ships with your software.

Adjusting mouse settings on target devices

Before a computer connected to the DSR1021/1022 switch may be used for remote user control, you must set the target mouse speed and turn off acceleration. For machines running Microsoft® Windows® (Windows NT®, 2000, XP, Server 2003), use the default PS/2 mouse driver.

NOTE: For the various versions of Windows, mouse motion and acceleration are set in different places within the Mouse Control Panel applet. If you don't find the motion or acceleration options as described in the following procedures, check the other tabs on the Mouse Control Panel applet.

To adjust mouse settings on Windows NT (using default drivers):

1. From the Desktop, select *Start* - *Settings* - *Control Panel* - *Mouse*. The Mouse Properties dialog box will appear.
2. Click on the *Motion* tab.

3. Set the Pointer speed to *Slow.* This will also need to be done for any NT user account that will be accessing the NT system through the DSR1021/1022 switch.
4. Set Acceleration to *None* for mouse sync.
5. Click *OK*.
6. Click *Mouse Align* in the DSView software remote session window(s) to realign the mouse.

To adjust mouse settings on Windows 2000 (using default drivers):

1. From the Desktop, select *Start* - *Settings* - *Control Panel* - *Mouse*. The Mouse Properties dialog box will appear.
2. Click on the *Motion* tab.
3. Set Speed to the default of 50% (the sixth tick mark from the left).
4. Set Acceleration to *None* for mouse sync.
5. Click *OK*.
6. Click *Mouse Align* in the DSView software remote session window(s) to realign the mouse.

To adjust mouse settings on Windows XP or Server 2003 (using default drivers):

1. From the Desktop, select *Start* - *Control Panel* - *Mouse*. The Mouse Properties dialog box will appear.
2. Click on the *Pointer Options* tab.
3. Set Speed to the default of 50% (the sixth tick mark from the left).
4. Uncheck the *Enhance pointer precision* checkbox.
5. Click *OK*.
6. Click *Mouse Align* in the DSView software remote session window(s) to realign the mouse.

To adjust mouse settings using IntelliPoint® drivers:

1. From the Desktop, select *Start* - *Settings* - *Control Panel* - *Mouse*. The Mouse Properties dialog box will appear.
2. Click on the *Pointer Options* tab.
3. Set the speed setting to the default, which is the midpoint of the Pointer Speed slider (five tick marks on each side of the slider).
4. Click *Advanced*. The Advanced Pointer Speed dialog box will appear.
5. Uncheck the *Enhanced pointer precision* checkbox, then click *OK* to close the dialog box.
6. Click *OK* to close the Mouse Properties dialog box.
7. Click *Mouse Align* in the DSView software remote session window(s) to realign the mouse.

To adjust mouse settings using Red Hat® Linux® drivers:

1. From the Desktop Controls, select the mouse settings.
2. Set acceleration to the center position of the slider (the fourth tick mark from the left) and apply the changes.

NOTE: If you are using an older version of Red Hat Linux software with a numerical slider, set mouse acceleration to 1.0 and apply the changes.

3. Click *Mouse Align* in the DSView software remote session window(s) to realign the mouse.

To adjust mouse settings using Sun Solaris™ drivers:

1. From the Workspace Menu, select *Applications* and then select *Application Manager* from the Applications menu. The Application Manager will appear.
2. From the Application Manager, double-click *Desktop_Controls*. The Application Manager - Desktop_Controls will appear.
3. From the Application Manager - Desktop_Controls, double-click *Mouse Style Manager*. The Mouse Style Manager dialog box will appear.
4. Set Acceleration to 1.0 for mouse sync.
5. Click *OK*.
6. In the DSView software remote session window, select *Video - Scaling - Auto Scale*.
7. In the DSView software remote session window, select *Mouse - Scale*. The Mouse Scaling dialog box will appear.
8. In the Scaling Type area, select *Normal*, then click *OK*.
9. Click *Mouse Align* in the DSView software remote session window(s) to realign the mouse.

CHAPTER 3

Local Port Operation

Controlling Your System at the Local Port

The DSR1021/1022 switch includes a local port on the back. This port allows you to connect a keyboard, monitor and mouse to the switch for direct access. The DSR1021/1022 switch uses the OSCAR® graphical user interface, which has intuitive menus to configure your system and select target devices. Targets can be identified by customizable names.

Viewing and Selecting Ports and Servers

Use the Main dialog box to view, configure and control target devices in the DSR switching system. You may view the target devices by name, port or by the unique Electronic ID (EID) embedded in each DSRIQ module. You will see an OSCAR interface generated port list by default when you first launch the OSCAR interface.

The Port column indicates the port to which a target device is connected.

To access the OSCAR interface Main dialog box:

Press **Print Screen** to launch the OSCAR interface. The Main dialog box will appear.

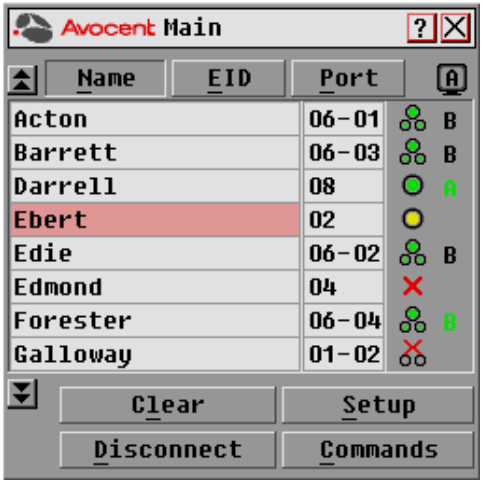

Figure 3.1: Main Dialog Box

Viewing the status of your DSR switching system

The status of target devices in your system is indicated in the far right columns of the Main dialog box. The following table describes the status symbols.

Table 3.1: OSCAR Interface Status Symbols

Symbol	Description
	(green circle) Server connected, powered up and the DSRIQ module is online.
	Connected target device is powered down or is not operating properly and the DSRIQ module is offline.
	Connected switch is online.
	Connected switch is offline or not operating properly.
	(yellow circle) The designated DSRIQ module is being upgraded. When this symbol displays, do not cycle power to the DSR switch or connected target devices and do not disconnect DSRIQ modules. Doing so may render the module permanently inoperable and require the DSRIQ module to be returned to the factory for repair.
	(green letter) DSRIQ module is being accessed by the indicated user channel.
	(black letter) DSRIQ module is blocked by the indicated user channel. For instance, in Figure 3.1, user B is viewing Forester, but is blocking access to Acton, Barrett and Edie which are connected to the same DSRIQ module.

Selecting target devices

Use the Main dialog box to select target devices. When you select a target device, the DSR1021/1022 switch reconfigures the keyboard and mouse to the settings for the selected target device.

To select target devices:

Double-click the target device name, EID or port number.
-or-
If the display order of your list is by port (*Port* button is depressed), type the port number and press **Enter**.
-or-
If the display order of your list is by name or EID (*Name* or *EID* button is depressed), type the first few letters of the name of the target device, or the EID number to establish it as unique and press **Enter**.

To select the previous target device:

Press **Print Screen** and then **Backspace**. This key combination toggles you between the previous and current connections.

To disconnect from a target device:

Press **Print Screen** and then **Alt+0** (zero). This leaves the user in a free state, with no target device selected. The status flag on your desktop displays *Free*.

Soft switching

Soft switching is the ability to switch target devices using a hotkey sequence. You can soft switch to a target device by pressing **Print Screen** and then typing the first few characters of its name or number. If you have set a Screen Delay Time and you press the key sequences before that time has elapsed, the OSCAR interface will not display.

To configure the OSCAR interface screen delay:

1. Press **Print Screen** to launch the OSCAR interface. The Main dialog box appears.
2. Click *Setup - Menu*. The Menu dialog box appears.
3. For Screen Delay Time, type the number of seconds of delay desired before the Main dialog box is displayed after **Print Screen** is pressed.
4. Click *OK*.

To soft switch to a target device:

1. Press **Print Screen**. If the display order of the Main dialog is by port (*Port* button is depressed), type the port number and press **Enter**.
   -or-
   If the display order of the Main dialog is by name (*Name* button is depressed), type the first few letters of the name of the target device to establish it as unique and press **Enter**.
2. To switch back to the previous target device, press **Print Screen** then **Backspace**.

Navigating the OSCAR Interface

This table describes how to navigate the OSCAR interface using the keyboard and mouse.

Table 3.2: OSCAR Interface Navigation Basics

This Keystroke	Does This
Print Screen	Opens the OSCAR interface. Press **Print Screen** twice to send the Print Screen keystroke to the currently selected DSRIQ module.
F1	Opens the Help screen for the current dialog box.
Escape	Closes the current dialog box without saving changes and returns to the previous one. If the Main dialog box is displayed, pressing **Escape** closes the OSCAR interface and displays a status flag if status flags are enabled. See *Controlling the status flag* in this chapter for more information. In a message box, pressing **Escape** closes the pop-up box and returns to the current dialog box.
Alt	Opens dialog boxes, selects or checks options and executes actions when used with underlined or other designated letters.

Table 3.2: OSCAR Interface Navigation Basics (Continued)

This Keystroke	Does This
Alt+X	Closes current dialog box and returns to previous one.
Alt+O	Selects the *OK* button, then returns to the previous dialog box.
Enter	Completes a switch operation in the Main dialog box and exits the OSCAR interface.
Single-click, Enter	In a text box, single-clicking an entry and pressing **Enter** selects the text for editing and enables the **Left** and **Right Arrow** keys to move the cursor. Press **Enter** again to quit the edit mode.
Print Screen, Backspace	Toggles back to previous selection.
Print Screen, Alt+0 (zero)	Immediately disengages user from a target device; no target device is selected. Status flag displays *Free*. (This only applies to the **0** (zero) on the keyboard and not the numeric keypad.)
Print Screen, Pause	Immediately turns on Screen Saver mode and prevents access to that specific console, if it is password protected.
Up/Down Arrows	Moves the cursor from line to line in lists.
Right/Left Arrows	Moves the cursor between columns. When editing a text box, these keys move the cursor within the column.
Page Up/Page Down	Pages up and down through Name and Port lists and Help pages.
Home/End	Moves the cursor to the top or bottom of a list.
Backspace	Erases characters in a text box.
Delete	Deletes current selection in the Scan list or characters in a text box.
Shift-Del	Deletes from the current selection to the end of the list when editing a Scan list.
Numbers	Type from the keyboard or keypad.
Caps Lock	Disabled. Use the **Shift** key to change case.
Backspace	Erases characters in a text box.

Configuring OSCAR Interface Menus

You can configure your DSR switching system from the Setup dialog box within the OSCAR interface. Select the *Names* button when initially setting up your DSR switching system to identify target devices by unique names. Select the other setup features to manage routine tasks for your target devices from the OSCAR interface menu.

Table 3.3: Setup Features to Configure the OSCAR Interface

Feature	Purpose
Menu	Change the Main dialog box list sorting option by toggling between numerically by port or EID number and alphabetically by name.
	Change the Screen Delay Time before the OSCAR interface displays after pressing **Print Screen**.
Flag	Change display, timing, color or location of the status flag.
Broadcast	Simultaneously send mouse movements and keystrokes to multiple target devices.
Scan	Set up a custom Scan pattern for up to eight (1021) or four (1022) target devices.
Screen Saver	Set passwords to protect or restrict access.
	Enable the screen saver.
Keyboard	Set the keyboard country code to send to Sun servers.
Devices	Identify the appropriate number of ports on an attached cascade switch.
Names	Identify target devices by unique names.

To access the OSCAR interface Setup dialog box:

1. Press **Print Screen** to launch the OSCAR interface. The Main dialog box appears.
2. Click *Setup*. The Setup dialog box appears.

Figure 3.2: Setup Dialog Box

Assigning target device names

Use the Names dialog box to identify target devices by name rather than by port number. The Names list is always sorted by port order. You can toggle between displaying the name or the EID number of each DSRIQ module, so even if you move the target device to another port, the name and configuration will be recognized by the switch.

NOTE: If a target device is turned off, its respective DSRIQ module will not appear in the Names list.

To access the OSCAR interface Names dialog box:

1. If the OSCAR interface is not open, press **Print Screen**. The Main dialog box appears.
2. Click *Setup - Names.* The Names dialog box appears.

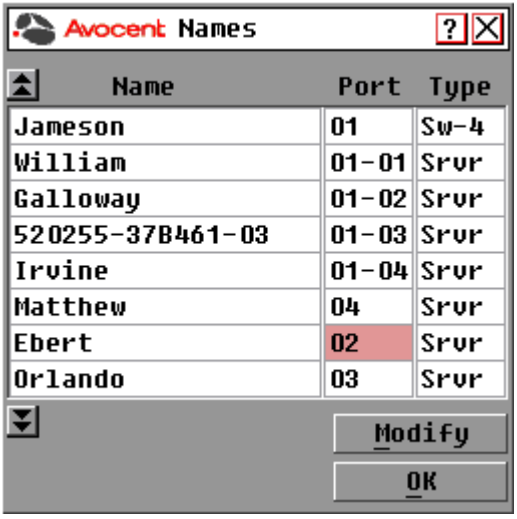

Figure 3.3: Names Dialog Box

NOTE: If new DSRIQ modules are discovered by the DSR1021/1022 switch, the on-screen list will be automatically updated. The mouse cursor will change into an hourglass during the update. No mouse or keyboard input will be accepted until the list update is complete.

To assign names to target devices:

1. In the Names dialog box, select a target device name or port number and click *Modify.* The Name Modify dialog box appears.

Figure 3.4: Name Modify Dialog Box

2. Type a name in the New Name box. Names of target devices may be up to 15 characters long. Legal characters include: A-Z, a-z, 0-9, space and hyphen.
3. Click *OK* to transfer the new name to the Names dialog box. Your selection is not saved until you click *OK* in the Names dialog box.
4. Repeat steps 1-3 for each target device in the system.
5. Click *OK* in the Names dialog box to save your changes.
   -or-
   Click *X* or press **Escape** to exit the dialog box without saving changes.

NOTE: If a DSRIQ module has not been assigned a name, the EID is used as the default name.

To list target devices alphabetically by name:

Press **Alt+N** or click *Name* in the Main dialog box.

Assigning device types

While the DSR switch automatically discovers attached cascade switches, you will need to specify the number of ports on the cascade switch through the Devices dialog box. You will see an Sw-4, Sw-6, Sw-8, Sw-16 or Sw-24 appear in the Type category for the cascade switch. Select the switch from the list and the Modify button appears, allowing you to assign to the switch the appropriate number of ports.

To access the OSCAR interface Devices dialog box:

1. If the OSCAR interface is not open, press **Print Screen**. The Main dialog box will appear.
2. Click *Setup - Devices*. The Devices dialog box appears.

NOTE: The Modify button will only be available if a configurable switch is selected.

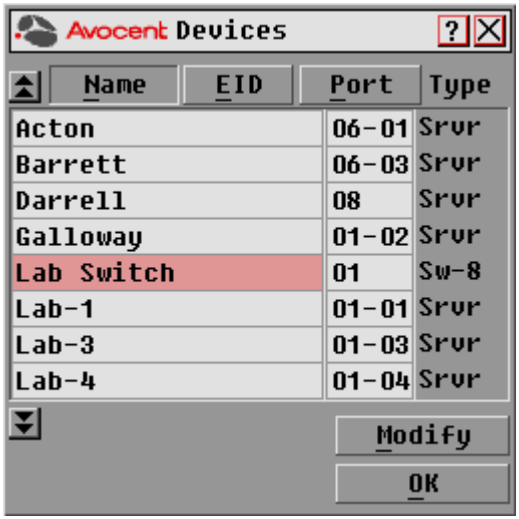

Figure 3.5: Devices Dialog Box

When the DSR switch discovers a cascade switch, you will notice the numbering format change from a DSR port only to [DSR port]-[switch port] to accommodate each target device under that switch.

For example, if a switch is connected to DSR port 6, each target device connected to it would be numbered sequentially. The target device using DSR port 6, switch port 1 would be 06-01, the target device using DSR port 6, switch port 2 would be 06-02 and so on.

To assign a device type:

1. In the Devices dialog box, select the desired port number.
2. Click *Modify*. The Device Modify dialog box appears.

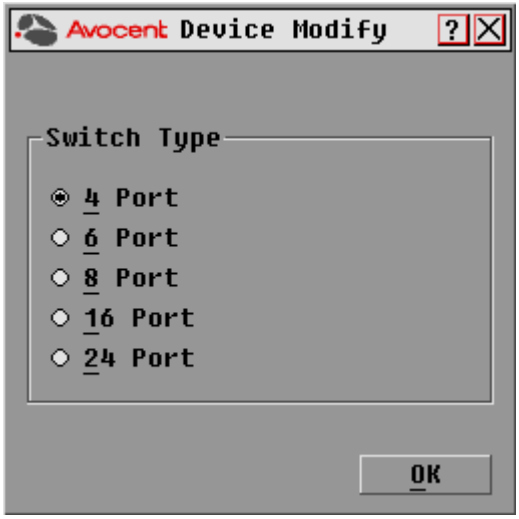

Figure 3.6: Device Modify Dialog Box

3. Choose the number of ports supported by your switch and click *OK*.
4. Repeat steps 1-3 for each port requiring a device type to be assigned.
5. Click *OK* in the Devices dialog box to save settings.

NOTE: Changes made in the Device Modify dialog box are not saved until you click *OK* in the Devices dialog box.

Changing the display behavior

Use the Menu dialog box to change the display order of target devices and set a Screen Delay Time for the OSCAR interface. The display order setting alters how target devices will display in several dialog boxes, including Main, Devices and Broadcast.

To access the OSCAR interface Menu dialog box:

1. Press **Print Screen** to launch the OSCAR interface. The Main dialog box appears.
2. Click *Setup* - *Menu* in the Main dialog box. The Menu dialog box appears.

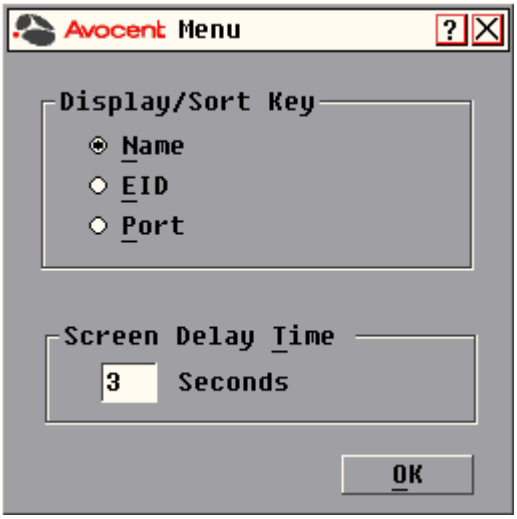

Figure 3.7: Menu Dialog Box

To choose the display order of target devices:

1. Select *Name* to display target devices alphabetically by name.
   -or-
   Select *EID* to display target devices numerically by EID number.
   -or-
   Select *Port* to display target devices numerically by port number.
2. Click *OK*.

Depending on the display method selected, the corresponding button will be depressed in the Main dialog box.

To set a Screen Delay Time for the OSCAR interface:

1. Type in the number of seconds (0-9) to delay the OSCAR display after you press **Print Screen**. Entering **0** will instantly launch the OSCAR interface with no delay.
2. Click *OK*.

Setting a Screen Delay Time allows you to complete a soft switch without the OSCAR interface displaying. To perform a soft switch, see *Soft switching* in this chapter.

Controlling the status flag

The status flag displays on your desktop and shows the name or EID number of the selected target device or the status of the selected port. Use the Flag dialog box to configure the flag to display by target device name or EID number, or to change the flag color, opacity, display time and location on the desktop.

Table 3.4: OSCAR Interface Status Flags

Flag	Description
Darrell	Flag type by name
520255-73F344	Flag type by EID number
Free	Flag indicating that the user has been disconnected from all systems
Darrell	Flag indicating that Broadcast mode is enabled

To access the OSCAR interface Flag dialog box:

1. If the OSCAR interface is not open, press **Print Screen**. The Main dialog box will appear.
2. Click *Setup - Flag.* The Flag dialog box appears.

Figure 3.8: Flag Dialog Box

To determine how the status flag is displayed:

1. Select *Name* or *EID* to determine what information will be displayed.
2. Select *Displayed* to show the flag all the time or select *Timed* to display the flag for only five seconds after switching.
3. Select a flag color under Display Color. The following flag colors are available:
   - *Flag 1* - Grey flag with black text
   - *Flag 2* - White flag with red text
   - *Flag 3* - White flag with blue text
   - *Flag 4* - White flag with violet text
4. In Display Mode, select *Opaque* for a solid color flag or select *Transparent* to see the desktop through the flag.
5. To position the status flag on the desktop:
   a. Click *Set Position* to gain access to the Position Flag screen.

Figure 3.9: Position Flag

   b. Left-click on the title bar and drag to the desired location.
   c. Right-click to return to the Flag dialog box.

NOTE: Changes made to the flag position are not saved until you click *OK* in the Flag dialog box.

6. Click *OK* to save settings.
   -or-
   Click *X* to exit without saving changes.

Broadcasting to target devices

The local user can simultaneously control multiple target devices in a system to ensure that all selected target devices receive identical input. You can choose to broadcast keystrokes and/or mouse movements independently.

NOTE: You can broadcast to as many as eight target devices at a time, one target device per port.

To access the OSCAR interface Broadcast dialog box:

1. If the OSCAR interface is not open, press **Print Screen**. The Main dialog box will appear.
2. Click *Setup* - *Broadcast*. The Broadcast dialog box appears.

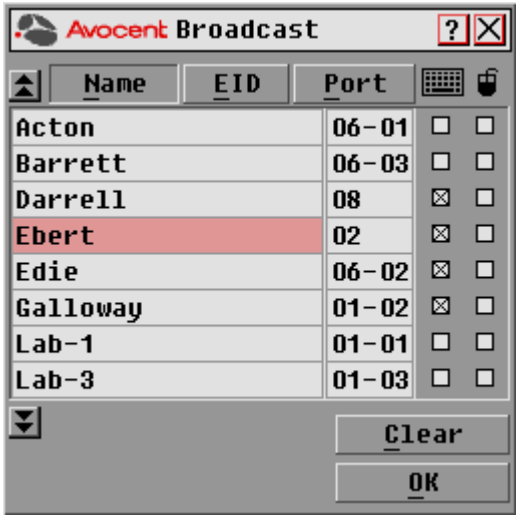

Figure 3.10: Broadcast Dialog Box

NOTE: Broadcasting Keystrokes - The keyboard state must be identical for all target devices receiving a broadcast to interpret keystrokes identically. Specifically, the **Caps Lock** and **Num Lock** modes must be the same on all keyboards. While the switch attempts to send keystrokes to the selected target devices simultaneously, some target devices may inhibit and thereby delay the transmission.

Broadcasting Mouse Movements - For the mouse to work accurately, all systems must have identical mouse drivers, desktops (such as identically placed icons) and video resolutions. In addition, the mouse must be in exactly the same place on all screens. Because these conditions are extremely difficult to achieve, broadcasting mouse movements to multiple systems may have unpredictable results.

To broadcast to selected target devices:

1. From the Broadcast dialog box, select the mouse and/or keyboard checkboxes for the target devices that are to receive the Broadcast commands.
   -or-
   Press the **Up** or **Down Arrow** keys to move the cursor to the target device. Then press **Alt+K** to select the keyboard checkbox and/or **Alt+M** to select the mouse checkbox. Repeat for additional target devices.
2. Click *OK* to save the settings and return to the Setup dialog box. Click *X* or press **Escape** to return to the Main dialog box.
3. Click *Commands*. The Commands dialog box appears.
4. Click the *Broadcast Enable* checkbox to activate Broadcasting.
5. From the user station, type the information and/or perform the mouse movements you wish to broadcast.

To turn Broadcasting off:

From the Commands dialog box, clear the *Broadcast Enable* checkbox.

Using Scan mode

In Scan mode, the DSR1021/1022 switch automatically scans from port to port (target device to target device). You can scan up to eight target devices, specifying which ones to scan and the number of seconds that each will display. The scanning order is determined by placement of the target device in the list. The list is always shown in scanning order. You can, however, choose to display the target device's name or EID number by pressing the appropriate button.

NOTE: Scanning is only available to the local user.

To add target devices to the Scan list:

1. If the OSCAR interface is not open, press **Print Screen**. The Main dialog box will appear.
2. Click *Setup - Scan*. The Scan dialog box appears.

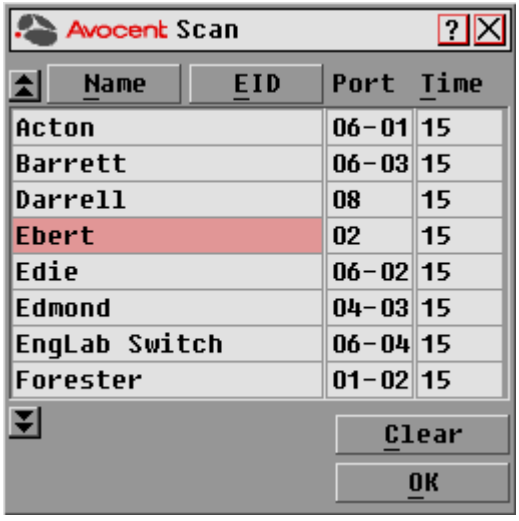

Figure 3.11: Scan Dialog Box

3. Determine the order within the list to add the target device. If there are no target devices in the Scan list, your cursor will appear in a blank line at the top of the list.
   -or-
   To add a target device to the end of the list, place your cursor in the last target device entry and press the **Down Arrow** key.
   -or-
   To add a target device within an existing list, place your cursor in the line below where you want to insert a new target device and press **Insert**.

4. Type the first few characters of a target device name or port number to scan. The first matching target device will appear in the line.
   -or-
   Press the following keyboard commands in the Name, Port or Time column to move through the list of target devices available to scan.
   a. Press **Alt+Down Arrow** to move the cursor down through the list of target devices.
   b. Press **Alt+Up Arrow** to move the cursor up through the list of target devices.
   c. Press **Alt+Home** to move the cursor to the first target device in the list.
   d. Press **Alt+End** to move the cursor to the last target device in the list.
5. In the Time column, type the number of seconds (from 3-255) of desired time before the scan moves to the next target device in the sequence.
6. Move the cursor to the next line or press **Down Arrow** and repeat steps 2-5 for each of the remaining target devices to be included in the scan pattern.
7. Click *OK*.

To remove a target device from the Scan list:

1. In the Scan dialog box, click the target device to be removed.
2. Press **Delete**.
   -or-
   Press **Shift+Delete** to remove the selected target device and all entries below it.
3. Click *OK*.

To start the Scan mode:

1. If the OSCAR interface is not open, press **Print Screen.** The Main dialog box will appear.
2. Click *Commands*. The Commands dialog box appears.

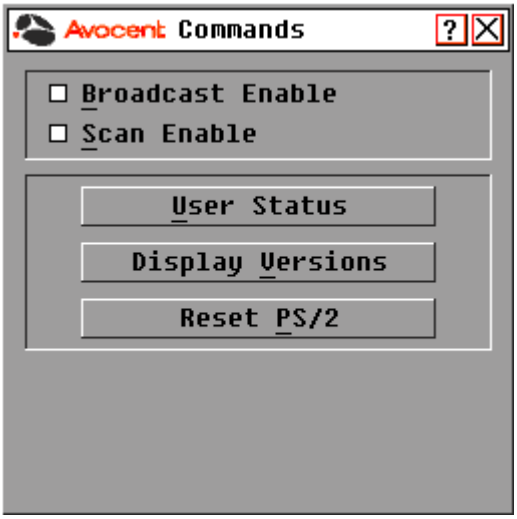

Figure 3.12: Commands Dialog Box

3. Select *Scan Enable* in the Commands dialog box.
4. Click *X* to close the Commands dialog box.

NOTE: Scanning will begin as soon as the Scan Enable button is selected.

To cancel Scan mode:

Select a target device if the OSCAR interface is open.
-or-
Move the mouse or press any key on the keyboard if the OSCAR interface is not open. Scanning will stop at the currently selected target device.
-or-
If the OSCAR interface is not open, press **Print Screen.** The Main dialog box will appear.

a. Click *Commands*. The Commands dialog box appears.
b. Clear *Scan Enable.*

Setting local port Screen Saver options

Use the Screen Saver dialog box to manage the screen saver inactivity time and test the Screen Saver mode on the local port. If security has been enabled in the DSView software, after the specified Inactivity Time elapses, the local port locks and remains locked until you press any key or move the mouse. You will then need to log in to continue.

To access the OSCAR interface Screen Saver dialog box:

1. If the OSCAR interface is not open, press **Print Screen**. The Main dialog box will appear.
2. Click *Setup - Screen Saver.* The Screen Saver dialog box appears.

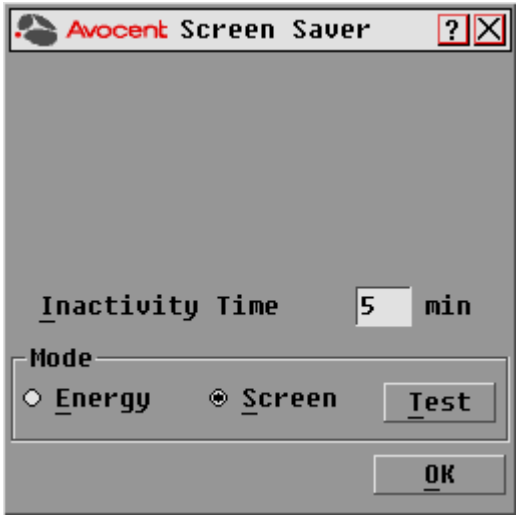

Figure 3.13: Screen Saver Dialog Box

To set the Screen Saver options:

NOTE: The Screen Saver password is set within the DSView software. For more information, see the DSView Installer/User Guide.

1. Type the number of minutes for Inactivity Time (from 1-99) to delay activation of password protection and the screen saver feature.
2. For Mode, select *Energy* if your monitor is ENERGY STAR® compliant; otherwise select *Screen*.

CAUTION: Monitor damage can result from the use of Energy mode with monitors not compliant with ENERGY STAR®.

3. (Optional) Click *Test* to activate the screen saver test which lasts 10 seconds then returns you to the Security dialog box.
4. Click *OK*.

To exit Screen Saver mode and log in to the local port:

1. Press any key or move the mouse.
2. If Screen Saver security was turned on in the DSView software, you will see a login screen. Enter your username and password and then click *OK*. If you do not know your username and password, see the DSView Server software administrator.
3. The Main dialog box appears and any previous target device connection will be restored.

To immediately turn on the screen saver:

Press **Print Screen**, then press **Pause**. This command only works when the user is connected to a target device.

Setting the keyboard country code

NOTE: Using a keyboard code that supports a language different from that of your DSR switch firmware will cause incorrect keyboard mapping.

Sun servers may use keyboard mappings for non-US keyboards. By default, the DSR1021/1022 switch sends the US keyboard country code to Sun and USB modules attached to target devices and the code is applied to the target devices when they are powered up or rebooted. Codes are then stored in the DSRIQ module.

Issues may arise when you use the US keyboard country code with a keyboard of another country. For example, the **Z** key on a US keyboard is in the same location as the **Y** key on a German keyboard. Sun servers will interpret pressing the **Y** key on a German keyboard as pressing the **Z** key when the US keyboard country code is used.

The Keyboard dialog box enables you to send a different keyboard country code than the default US setting. The specified country code is sent to all target devices attached to the DSR1021/1022 switches when they are powered up or rebooted and the new code is stored in the DSRIQ module.

NOTE: If a DSRIQ module is moved to a different target device, the keyboard country code will need to be reset.

See *Appendix F* for information on emulating certain Sun keys using a PS/2 keyboard and special considerations for Japanese and Korean Sun USB keyboards.

NOTE: Only local users can view or change keyboard country code settings.

To set the keyboard country code for Sun servers:

1. If the OSCAR interface is not open, press **Print Screen**. The Main dialog box will appear.
2. Click *Setup* - *Keyboard*. The Keyboard dialog box appears.

Figure 3.14: Keyboard Dialog Box

3. Select a country code and click *OK*.
4. Reboot the Sun servers. After rebooting, each Sun server will request the country code setting stored in the DSRIQ module.

NOTE: If you wish to reboot the target devices by power-cycling them, you must wait 90 seconds before rebooting. A soft reboot may be performed without waiting 90 seconds.

Managing Server Tasks Using the OSCAR Interface

From the OSCAR interface Commands dialog box, you can manage your DSR switching system and user connections, enable the Scan and Broadcast modes and update your firmware.

Table 3.5: Commands to Manage Routine Tasks for Your Target Device(s)

Feature	Purpose
Broadcast Enable	Begin broadcasting to your target devices. Configure a target device list for broadcasting under the Setup dialog box.
Scan Enable	Begin scanning your target devices. Set up a target device list for scanning in the Setup dialog box.
User Status	View and disconnect users.
Display Versions	View version information for the DSR switch as well as view and upgrade firmware for individual DSRIQ modules.
Reset PS/2	Re-establish operation of PS/2 keyboard and mouse.

To access the OSCAR interface Commands dialog box:

1. Press **Print Screen** to launch the OSCAR interface. The Main dialog box appears.
2. Click *Commands*. The Commands dialog box appears.

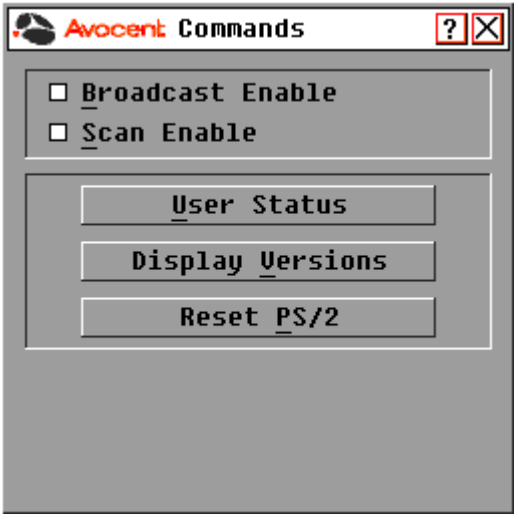

Figure 3.15: Commands Dialog Box

Viewing and disconnecting user connections

You can view and disconnect users through the User Status dialog box. The username (U) will always be displayed; however, you can display either the target device name or EID number to which a user is connected. If there is no user currently connected to a channel, the user field will be blank and the Server Name field will display *Free*.

To view current user connections:

1. If the OSCAR interface is not open, press **Print Screen**. The Main dialog box will appear.
2. Click *Commands* - *User Status*. The User Status dialog box appears.

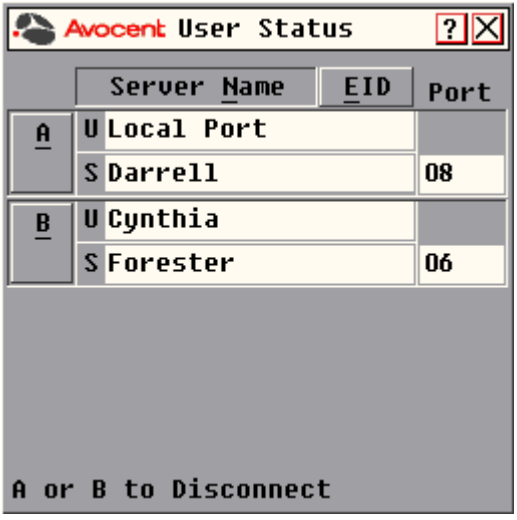

Figure 3.16: User Status Dialog Box

To disconnect a user:

1. If the OSCAR interface is not open, press **Print Screen**. The Main dialog box will appear.
2. Click *Commands* - *User Status*. The User Status dialog box appears.
3. Click the letter corresponding to the user to disconnect. The Disconnect dialog box will appear.

Figure 3.17: Disconnect Dialog Box

4. Click *OK* to disconnect the user and return to the User Status dialog box.
   -or-
   Click *X* or press **Escape** to exit the dialog box without disconnecting a user.

NOTE: If the User Status list has changed since it was last displayed, the mouse cursor will turn into an hourglass as the list is automatically updated. No mouse or keyboard input will be accepted until the list update is complete.

Resetting your PS/2 keyboard and mouse

NOTE: This function is for Microsoft Windows-based computers only. Resetting the PS/2 on a target device running any other operating system may require that you reboot that target device.

If your PS/2 keyboard or mouse locks up, you may be able to re-establish operation of these peripherals by issuing a Reset command. The Reset command sends a hot-plug sequence to the target device which causes the mouse and keyboard settings to be sent to the DSR1021/1022 switch. With communication re-established between the target device and the DSR1021/1022 switch, functionality is restored to the user.

To reset the PS/2 mouse and keyboard values:

1. If the OSCAR interface is not open, press **Print Screen**. The Main dialog box will appear.
2. Click *Commands - Reset PS/2*. A message box displays requesting that you confirm the reset. Click *OK*.
   a. A message appears indicating that the mouse and keyboard have been reset.

b. Click *X* to close the message box.
-or-
Click *X* or press **Escape** to exit without sending a Reset command to the PS/2 mouse and keyboard.

Displaying version information

The OSCAR interface enables you to display the version number of the switch firmware and any auxiliary devices connected to the switch. This information facilitates system troubleshooting and support. For optimum performance, keep your firmware current.

To display version information:

1. If the OSCAR interface is not open, press **Print Screen**. The Main dialog box will appear.
2. Click *Commands - Display Versions.* The Version dialog box appears. The top half of the box lists the subsystem versions in the DSR1021/1022 switch.

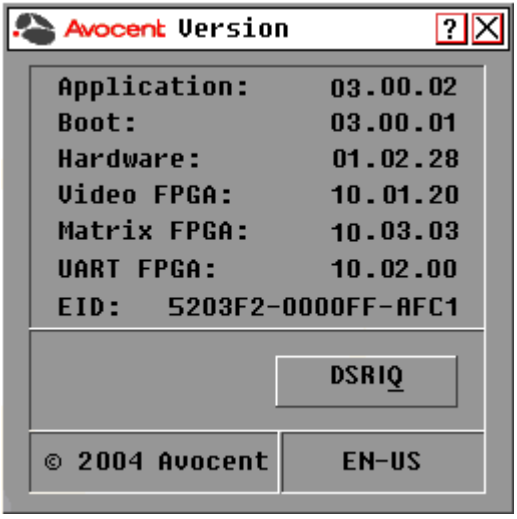

Figure 3.18: Version Dialog Box

3. Click *DSRIQ* to view individual DSRIQ module version information. The DSRIQ Selection dialog box appears.

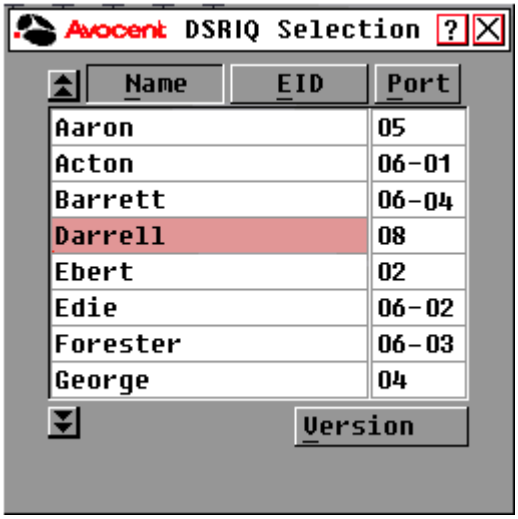

Figure 3.19: DSRIQ Selection Dialog Box

4. Select a DSRIQ module to view and click the *Version* button. The DSRIQ Version dialog box appears. For more information on loading firmware, see *Appendix A.*

Figure 3.20: DSRIQ Version Dialog Box

5. Click *X* to close the DSRIQ Version dialog box.

CHAPTER 4

Terminal Operations

The Console Menu

Each DSR1021/1022 switch may be configured at the appliance level through the Console menu interface accessed through the SETUP port on the back of the switch. All terminal commands are accessed through a terminal or PC running terminal emulation software.

NOTE: This is NOT the recommended method for setting options for the DSR switch. The preferred method is to make all configuration settings in the DSView Server software. See the DSView Installer/User Guide for more information.

Network Configuration

To configure network settings using the Console menu:

1. When you power up your DSR switch, the switch initializes for approximately one minute. After it completes initialization, press any key on the terminal or on the PC running the

terminal emulation software to access the Console menu interface. Actually, the terminal may be connected at any time, even when the switch is already powered.

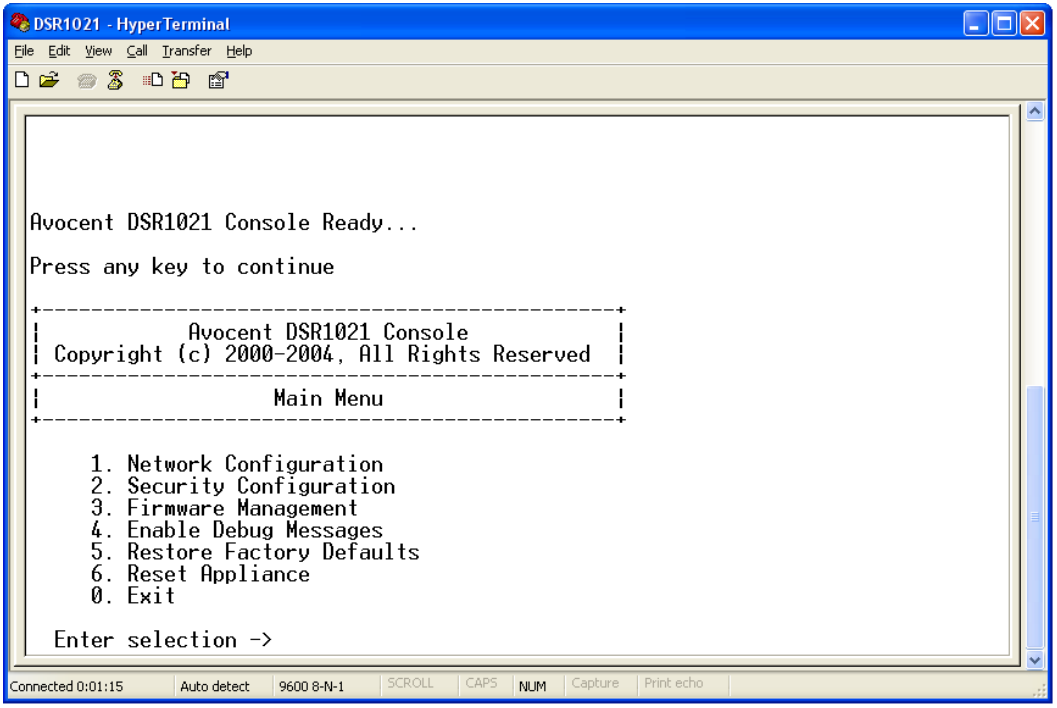

Figure 4.1: Console Main Menu

2. The Console Main menu displays. Type **1** and press **Enter** for the Network Configuration option. The Network Configuration menu displays.

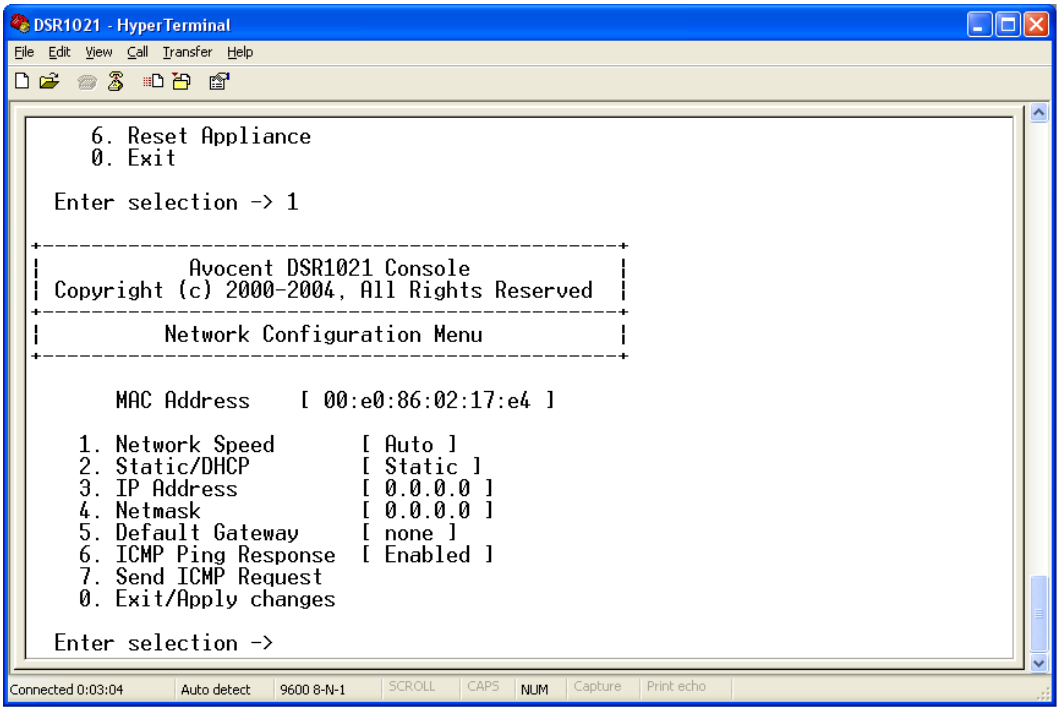

Figure 4.2: Network Configuration Menu

3. Type **1** and press **Enter** to set your network speed. When possible, you should set your connection manually without relying on the auto negotiate feature. After you press **Enter**, you will be returned to the Network Configuration menu.
4. Type **2** and press **Enter** to specify whether you are using a static or Dynamic Host Configuration Protocol (DHCP) address. A static IP address may be used to provide a user-defined IP address, netmask and default gateway for the DSR1021/1022 switch. Avocent recommends using a static IP address for ease of configuration. DHCP is a protocol that automates the configuration of TCP/IP-enabled computers. When DHCP is selected, the IP Address, Netmask and Default Gateway settings are automatically assigned to the DSR1021/1022 switch and may not be modified by a DS user. If you are using the DHCP option, please configure your DHCP server to provide an IP address to the DSR1021/1022 switch and then skip step 5.
5. Select the remaining options from the Network Configuration menu, in turn, to finish configuring your DSR1021/1022 switch for IP address, netmask, default gateway and ping response.
6. Type **0** (zero) and press **Enter** to return to the Console Main menu.

Other Console Main Menu Options

Besides the Network Configuration option, the Console Main menu of the DSR1021/1022 switch features the following menu items: Security Configuration, Firmware Management, Enable Debug Messages, Restore Factory Defaults, Reset Appliance and Exit. Each is discussed below.

Security Configuration

The DSR1021/1022 switch contains an internal database that may be used by the DSR Remote Operations software, the local port, or the CONSOLE port if the DSView Server software is unavailable.

The Security Configuration menu contains the following options:

- Local User Accounts: Add, edit or delete users to/from the DSR1021/1022 switch database.
- Console Password: Enable or disable using security for the console (access requires an Admin account).
- Reset Certificates: Reset the certificate used by the DSView software system.
- Secure Mode: Enable or disable the DSView software Secure mode.

Local User Accounts

NOTE: When you use the options to add, edit or delete a user, a list of existing users will appear. You may enter **N** to display the next page of users in the database or enter **P** to go back to the previous page of users.

To add a user to the DSR1021/1022 switch database:

1. Type **2** and press **Enter** to access the Security Configuration menu option.
2. Type **1** and press **Enter** to access the Local User Accounts menu option. A list of users already within the database will appear.
3. Type **A**.
4. You will be prompted to enter the username to add. Type a username and press **Enter**.
5. You will be prompted to type a password for the user. Type a password and press **Enter**.
6. You will be prompted to re-type the password. Type the password again and press **Enter**.
7. Enter **0** (zero) to exit.

To rename a user in the DSR1021/1022 switch database:

1. From the Console Main menu, type **2** and press **Enter** to access the Security Configuration menu option.
2. Type **1** and press **Enter** to access the Local User Accounts menu option. A list of users already within the database will appear.
3. Type **E**.
4. You will be prompted to enter the number of the user you wish to rename. Type the user's number then press **Enter**.

5. Type a new username and press **Enter**.
6. Enter the password for the user, then re-enter the password to confirm it.
7. Enter **0** (zero) to exit.

To remove a user from the DSR1021/1022 switch database:

1. From the Console Main menu, type **2** and press **Enter** to access the Security Configuration menu option.
2. Type **1** and press **Enter** to access the Local User Accounts menu option. A list of users already within the database will appear.
3. Type **D**.
4. You will be prompted to enter the number of the user you wish to delete. Type the user's number then press **Enter**.
5. You will be prompted to confirm deletion of the user from the DSR1021/1022 switch database. Type **Y** and press **Enter** to remove the user.
6. Enter **0** (zero) to exit.

Console Password

If this is enabled, access to the switch's Console Main menu will require the user to log in.

Reset Certificates

This menu option enables you to clear the certificate sent by the DSView software to the DSR switch.

When a DSR1021/1022 switch is added to a server running DSView software, a certificate is downloaded from that server to the DSR switch automatically. That certificate is replicated across all servers running DSView software operating in a predefined system. Thereafter, any of the servers in that system will be able to communicate with the DSR switch.

If the server running DSView software cannot contact the DSR1021/1022 switch to add the certificate, an error message is displayed and the DSR1021/1022 switch is not added to the database.

Secure Mode

The DSR switch operates in one of two modes: Security disabled or Security enabled.

In Security disabled mode, the DSR1021/1022 switch allows any server running DSView software to communicate with it.

In Security enabled mode, an initial server running DSView software is allowed to download a certificate to the switch. If that server is part of a system that replicates certificates, it will pass the certificate to the other servers in that certificate replication system. Thereafter, all servers in that system will be allowed to access the DSR switch. All servers that are not part of that system will be locked out.

When the DSR1021/1022 switch is removed from the DSView software database, the certificate is removed from the DSR1021/1022 switch. This enables you to move the DSR switch from one certificate replication system to another. The certificate can also be removed using the Console menu accessed via the SETUP port on the DSR1021/1022 switch. See the *Reset Certificates* section.

See the DSView Installer/User Guide for more information on software security.

Firmware Management

This menu contains the FLASH Download selection. For more information, see *Appendix A.*

Enable Debug Messages

This menu option turns on console status messages. Because this can significantly reduce performance, you should only enable debug messages when instructed to do so by Avocent Technical Support. When you are finished viewing the messages, press any key to exit this mode.

Restore Factory Defaults

This menu option will restore all switch options to the default settings.

Reset Appliance

This menu option allows you to execute a soft reset of the DSR1021/1022 switch.

Exit

This menu selection will return you to the ready prompt. If the Console menu interface password is enabled, you must exit the Console Main menu so that the next user will be prompted with the Username and Password login screen.

APPENDICES

Appendix A: FLASH Upgrades

The DSR1021/1022 switch FLASH upgrade feature allows you to update your appliance with the latest firmware available. This update can be performed using the DSView software or using a Trivial File Transfer Protocol (TFTP) server.

After the FLASH memory is reprogrammed with the upgrade, the DSR switch performs a soft reset, which terminates all DSRIQ module sessions. A target device experiencing a DSRIQ module firmware update may not display, or may display as disconnected. The target device will appear normally when the FLASH update is completed.

NOTE: During an upgrade, the DSRIQ module status indicator in the OSCAR Main dialog box will be yellow.

CAUTION: Disconnecting a DSRIQ module during a firmware update or cycling power to the target device will render the module inoperable and require the DSRIQ module to be returned to the factory for repair.

To upgrade the DSR switch firmware using the DSView software:

The preferred method for updating the firmware is to use the DSView software. See the DSView Installer/User Guide for detailed instructions.

To upgrade the DSR switch firmware using the Console menu interface:

NOTE: If you do not have a TFTP server, you can find several shareware and freeware programs on the Internet that you can download and install.

1. Visit http://www.avocent.com/support and download the latest FLASH firmware from Avocent. Save the FLASH upgrade file to the appropriate directory on the TFTP server.
2. Connect a terminal or PC running terminal emulation software (such as HyperTerminal) to the SETUP port on the back panel of the DSR1021/1022 switch using the supplied null modem cable. The terminal should be set to 9600 bps, 8 bits, 1 stop bit, no parity and no flow control.
3. If the DSR1021/1022 switch is not on, turn it on now. After approximately one minute, press any key to access the Console Main menu.
4. The Console Main menu displays. Select the *Firmware Management* option.

NOTE: The current version of your firmware will be displayed on the Firmware Management menu.

5. Type **1** and press **Enter** to access FLASH Download.
6. Type the IP address of your TFTP server and press **Enter**.
7. Enter the name of the file that you downloaded from the Avocent web site.
8. Confirm the TFTP download by typing a **y** or **yes** and pressing **Enter**.
9. The DSR1021/1022 switch will verify that the file you downloaded is valid. Next, you will be prompted to confirm the upgrade. Type a **y** or **yes** and press **Enter** to confirm.

10. The DSR1021/1022 switch will begin the FLASH upgrade process. On-screen indicators will display the upgrade progress. When the upload is complete, the DSR1021/1022 switch will reset and upgrade the internal subsystems.
11. Once the upgrade is complete, a verification message will appear on-screen.

Appendix B: Using DSView Software Over a Modem Connection

An external modem may be attached to the DSR1021/1022 switch. This modem may be used to access the switch when an Ethernet connection is not available.

A modem/PPP dial-up connection must be established before the remote operation is enabled. The dial-up connection options should be set to 115,200 bps, 8 bits, 1 stop bit, no parity and enabled hardware flow control.

Before you begin

The following actions should be performed before using the DSR Remote Operations software:

- Ensure that the DSR1021/1022 switch is configured. See Chapter 2 for more information.
- Ensure that DSR switch users have been added to the DSR1021/1022 switch internal database. If the DSView Server software is not available, the switch database is used for authentication. If neither are available, authentication cannot be performed for the DSR1021/1022 switch. See Chapter 4 for more information.
- Ensure that an external modem is attached to the DSR1021/1022 switch MODEM port. The modem should have auto-answer turned off (typically a modem's default setting).
- Ensure that your client PC contains dial-up software and that the software is configured properly. See your operating system documentation for more information.

Establishing a DSR Remote Operations software connection

This is explained in detail in the DSView Installer/User Guide.

Appendix C: Using DSRIQ-SRL Modules

The DSRIQ-SRL module is a serial-to-VGA converter which permits VT100-capable devices to be viewed from the DSR switch local port or by using the DSView software. The actual serial data is not accessed, but is merely displayed. All serial data coming from the target device is displayed in a VT100 window, placed into a video buffer and sent to the DSR switch as though it came from a VGA target. Likewise, keystrokes entered on a keyboard are sent to the attached device as though they were typed upon a VT100 terminal.

DSRIQ-SRL module modes

The following modes can be accessed from the DSRIQ-SRL module:

- On-Line: This mode enables you to send and receive serial data.
- Configuration: This mode enables you to specify DSR switch communication parameters, the appearance of the Terminal Applications menu and key combinations for specific actions and macros.
- History: This mode enables you to review serial data.

Configuring the DSRIQ-SRL module

NOTE: The DSRIQ-SRL module is a DCE device and only supports VT100 terminal emulation.

Pressing **Ctrl-F8** will activate the Configuration screen of the DSRIQ module's Terminal Applications menu, which enables you to configure your DSRIQ-SRL module.

NOTE: When any Terminal Applications menu is active, pressing **Enter** saves changes and returns you to the previous screen. Pressing **Escape** returns you to the previous screen without saving changes.

Within the Terminal Applications menu's Configuration screen, you can modify the following options:

- Baud Rate: This option allows you to specify the serial port communications speed. Available options are 300, 1200, 2400, 9600, 19,200, 34,800, 57,600 or 115,200 bps. The default value is 9600.
- Parity: This option allows you to specify the serial port's communications parity. Available options are EVEN, ODD or NONE. The default value is NONE.
- Flow Control: This option allows you to specify the type of serial flow control. Available options are NONE, XOn/XOff (software) and RTS/CTS (hardware). The default value is NONE. If you select a bps rate of 115,200, the only available flow control is RTS/CTS (hardware).
- DSR/CD Mode: This option allows you to control how the DSR switch and CD lines operate. Available options are Always on and Toggle. When in Toggle mode, DSR and CD lines are turned off for one-half second and then turned on each time a module is selected or deselected. The default value is Always on.

- Enter Sends: This option enables you to specify the keys that are transmitted when **Enter** is pressed. Available options are <CR> (Enter), which moves the cursor to the left side of the screen, or <CR><LF> (Enter-Linefeed), which moves the cursor to the left side of the screen and down one line.
- Received: This option enables you to specify how the module translates a received **Enter** character. Available options are <CR> (Enter) or <CR><LF> (Enter-Linefeed).
- Background: This option changes the screen's background color. The currently-selected color displays in the option line as it is changed. Available colors are Black, Light Grey, Yellow, Green, Teal, Cyan, Blue, Dark Blue, Purple, Pink, Orange, Red, Maroon and Brown. The default color is Black. This value cannot be identical to the Normal Text or Bold Text value.
- Normal Text: This option changes the screen's normal text color. The currently-selected color displays in the option line as it is changed. Available colors are Grey, Light Grey, Yellow, Green, Teal, Cyan, Blue, Dark Blue, Purple, Pink, Orange, Red, Maroon and Brown. The default color is Grey. This value cannot be identical to the Bold Text or Background value.
- Bold Text: This option changes the screen's bold text color. The currently-selected color displays in the option line as it is changed. Available colors are White, Yellow, Green, Teal, Cyan, Blue, Dark Blue, Purple, Pink, Orange, Red, Maroon, Brown and Light Grey. The default color is White. This value cannot be identical to the Normal Text or Background value.
- Screen Size: This option allows you to specify the screen's text width size. Available values are widths of 80 columns or 132 columns. The length for both widths is 26 lines.

The following Terminal Application menu's Configuration screen options enable you to define the function keys that will perform a selected action. To specify a new function key, press and hold the **Ctrl** key, then press the function key that you want to associate with the action. For example, if you want to change the Configuration (Config) Key Sequences option from <CTRL-F8> to <CTRL-F7>, press and hold the **Ctrl** key and then press **F7**.

- Config Key Sequences: This option allows you to define the key combination that causes the Terminal Application menu's Configuration screen to appear. The default key sequence is **Ctrl-F8**.
- On-Line Key Sequence: This option allows you to define the key sequence that displays the On-Line mode. The default key sequence is **Ctrl-F10**.
- Help Key Sequence: This option allows you to define the key combination that displays the Help System screen. The default key sequence is **Ctrl-F1**.
- History Key Sequence: This option allows you to define the key combination that enables History mode. The default key sequence is **Ctrl-F9**.
- Clear History Key Sequence: This option allows you to define the key combination that clears the history buffer while in History mode. The default key sequence is **Ctrl-F11**.
- Break Key Sequence: This option allows you to configure the key combination that generates a break condition. The default key sequence is **Alt-B**.

To configure a DSRIQ-SRL module:

1. Press **Ctrl-F8**. The Configuration Screen will appear.
2. Select a parameter to change. You can navigate the Configuration Screen using the **Up Arrow** and **Down Arrow** keys.
3. Modify the selected value using the **Left Arrow** and **Right Arrow** keys.
4. Repeat steps 2 and 3 to modify additional values.
5. Press **Enter** to save your changes and exit the Configuration Screen.
   -or-
   Press **Escape** to exit the Configuration Screen without saving the changes.

Creating a DSRIQ-SRL module macro

Pressing the **Page Down** key when the Terminal Applications menu's Configuration screen is displayed will provide access to the Macro Configuration screen. The DSRIQ-SRL module can be configured with up to 10 macros. Each macro can be up to 128 characters in length.

To create a macro:

1. Select the DSRIQ-SRL module you wish to configure and press **Ctrl-F8** to activate the Terminal Applications menu's Configuration screen.
2. When the Terminal Applications menu appears, press **Page Down** to view the Macro Configuration screen. The Macro Configuration screen shows the 10 available macros and the associated key sequences, if any, for each.
3. Using the **Up Arrow** and **Down Arrow** keys, scroll to an available macro number and highlight the listed keystroke sequence. Type the new macro keystroke sequence over the default. Any combination of **Ctrl** or **Alt** and a single key may be used. When you have finished entering the keystroke sequence that will activate the new macro, press the **Down Arrow** key.
4. On the line below the macro keystroke sequence you just entered, type the keystroke sequence that you wish the macro to perform.
5. Repeat steps 3 and 4 to configure additional macros.
6. When finished, press **Enter** to return to the previous screen.

Using History mode

History mode allows you to examine the contents of the history buffer, which contains the events that have occurred.

The DSRIQ-SRL module maintains a buffer containing 240 lines minimum, or 10 screens, of output. When the history buffer is full, it will add new lines at the bottom of the buffer and delete the oldest lines at the top of the buffer.

NOTE: The Config Key Sequence, On-Line Key Sequence and Clear History Key Sequence used in the following procedure are the default values. These key combinations can be changed using the Terminal Applications menu.

To use History mode:

1. Press **Ctrl-F9**. The mode will display as History.
2. Press one of the following key combinations to perform the indicated action:
   - **Home**: Move to the top of the buffer.
   - **End**: Move to the bottom of the buffer.
   - **Page Up**: Move up one buffer page.
   - **Page Down**: Move down one buffer page.
   - **Up Arrow**: Move up one buffer line.
   - **Down Arrow**: Move down one buffer line.
   - **Ctrl-F8**: Enters Configuration mode. The Configuration screen will appear.
   - **Ctrl-F9**: While in Configuration mode, return to the previous screen with History mode enabled.
   - **Ctrl-F10**: While in Configuration mode, return to the previous screen with On-Line mode enabled.
   - **Ctrl-F11**: Clears the history buffer. If you choose this option, a warning screen will appear. Press **Enter** to delete the history buffer, or **Escape** to cancel the action. The previous screen will reappear.
3. When finished, press **Ctrl-F10** to exit History mode and return to On-Line mode.

DSRIQ-SRL module pinouts

Table C.1: DSRIQ-SRL Module Pinouts

DB9-F Pin	Host Signal Name/Description	Signal Flow	SRL Signal Name/Description
1	DCD - Data Carrier Detect	Out of SRL	DTR - Data Terminal Ready
2	RXD - Receive Data	Out of SRL	TXD - Transmit Data
3	TXD - Transmit Data	In to SRL	RXD - Receive Data
4	DTR - Data Terminal Ready	In to SRL	DSR - Data Set Ready
5	GND - Signal Ground	N/A	GND - Signal Ground
6	DSR - Data Set Ready	Out of SRL	DTR - Data Terminal Ready
7	RTS - Request to Send	In to SRL	CTS - Clear to Send
8	CTS - Clear to Send	Out of SRL	RTS - Request to Send
9	N/C - Not Connected	N/A	N/C - Not Connected

Appendix D: UTP Cabling

The following information is intended to brief you on various aspects of connection media. The performance of a DSR switching system depends on high quality connections. Poor quality or poorly installed or maintained cabling can diminish DSR system performance.

NOTE: This appendix is for information purposes only. Please consult with your local code officials and/or cabling consultants prior to any installation.

DSR switching systems utilize UTP cabling.

UTP copper cabling

The following are basic definitions for the three types of UTP cabling that the DSR switch supports:

- CAT 5 UTP (4-pair) high performance cable consists of twisted pair conductors, used primarily for data transmission. The twisting of the pairs gives this cable some immunity from the infiltration of unwanted interference. CAT 5 cable is generally used for networks running at 10 or 100 Mbps.
- CAT 5E (enhanced) cable has the same characteristics as CAT 5, but is manufactured to somewhat more stringent standards.
- CAT 6 cable is manufactured to tighter requirements than CAT 5E cable. CAT 6 has higher measured frequency ranges and significantly better performance requirements than CAT 5E cable at the same frequencies.

Wiring standards

There are two supported wiring standards for 8-conductor (4-pair) RJ-45 terminated UTP cable: EIA/TIA 568A and B. These standards apply to installations utilizing CAT 5, 5E and 6 cable specifications. The DSR switching system supports either of these wiring standards. Please refer to the following table for details.

Table D.1: UTP Wiring Standards

Pin	EIA/TIA 568A	EIA/TIA 568B
1	white/green	white/orange
2	green	orange
3	white/orange	white/green
4	blue	blue
5	white/blue	white/blue
6	orange	green

Table D.1: UTP Wiring Standards (Continued)

Pin	EIA/TIA 568A	EIA/TIA 568B
7	white/brown	white/brown
8	brown	brown

Cabling installation, maintenance and safety tips

The following is a list of important safety considerations that should be reviewed prior to installing or maintaining your cables:

- Keep all CAT 5 runs to a maximum of 10 meters each.
- Maintain the twists of the pairs all the way to the point of termination, or no more that one-half inch untwisted. Do not skin off more than one inch of jacket while terminating.
- If bending the cable is necessary, make it gradual with no bend sharper than a one inch radius. Allowing the cable to be sharply bent or kinked can permanently damage the cable's interior.
- Dress the cables neatly with cable ties, using low to moderate pressure. Do not over tighten ties.
- Cross-connect cables where necessary, using rated punch blocks, patch panels and components. Do not splice or bridge cable at any point.
- Keep CAT 5 cable as far away as possible from potential sources of EMI, such as electrical cables, transformers and light fixtures. Do not tie cables to electrical conduits or lay cables on electrical fixtures.
- Always test every installed segment with a cable tester. "Toning" alone is not an acceptable test.
- Always install jacks so as to prevent dust and other contaminants from settling on the contacts. The contacts of the jack should face up on the flush mounted plates, or left/right/down on surface mount boxes.
- Always leave extra slack on the cables, neatly coiled in the ceiling or nearest concealed location. Leave at least five feet at the work outlet side and 10 feet at the patch panel side.
- Choose either 568A or 568B wiring standard before beginning. Wire all jacks and patch panels for the same wiring scheme. Don't mix 568A and 568B wiring in the same installation.
- Always obey all local and national fire and building codes. Be sure to firestop all cables that penetrate a firewall. Use plenum rated cable where it is required.

Appendix E: Technical Specifications

Table E.1: DSR1021/1022 Switch Product Specifications

Server Ports	
Number	8 (DSR1021 switch) 4 (DSR1022 switch)
Types	DSRIQ-PS/2, DSRIQ-USB, DSRIQ-VSN (Sun VGA), DSRIQ-WSN (Sun 13W3) and DSRIQ-SRL modules
Connectors	RJ-45
Sync Types	Separate horizontal and vertical
Plug and Play	DDC2B
Video Resolution	640 x 480 @ 60 Hz (Local Port and Remote Port Minimum) 800 x 600 @ 75 Hz 960 x 700 @ 75 Hz 1024 x 768 @ 75 Hz 1280 x 1024 @ 75 Hz (Remote Port Maximum using a DSRIQ module)
Supported Cabling	4-pair UTP CAT 5 or CAT 6, 10 meters maximum length
SETUP Port	
Number	1
Type	Serial RS-232 Null Modem Cable
Connector	DB9 Male
Network Connection	
Number	1
Type	Ethernet: IEEE 802.3 2002 Edition - 10BaseT, 100BaseT
Connector	RJ-45
Local Port	
Number	1
Type	PS/2 and VGA
Connectors	PS/2 MiniDIN and 15-pin D-Sub
MODEM Port	
Number	1
Type	Serial RS-232
Connectors	DB9 Male

Table E.1: DSR1021/1022 Switch Product Specifications (Continued)

SPC Device Port	
Number	1
Type	RJ-45
Dimensions	
Height x Width x Depth	1.72 x 17.00 x 8.08 in; 1U form factor (4.37 x 43.18 x 20.51 cm)
Weight	5.3 lbs (2.40 kg) without cables
Heat Dissipation	92 BTU/hr
Airflow	8 cfm
Power Supply	
AC-input Power	25 W maximum
AC-input Range	100 - 240 VAC
AC-input Current Rating	600 mA RMS Max
AC-input Cable	18 AWG three-wire cable, with a three-lead IEC-320 receptacle on the power supply end and a country-dependent plug on the power resource end
AC Frequency	50 - 60 Hz autosensing
Ambient Atmospheric Condition Ratings	
Temperature	32 to 104 degrees Fahrenheit (0 to 40 degrees Celsius) operating; -4 to 158 degrees Fahrenheit (-20 to 70 degrees Celsius) nonoperating
Humidity	10 - 95% noncondensing
Safety and EMC Standards	UL, FCC, cUL, ICES-003, CE, GS, VCCI, MIC, C-Tick, GOST

Appendix F: Sun Advanced Key Emulation

Certain keys on a standard Type 5 (US) Sun keyboard can be emulated by key press sequences on a PS/2 keyboard. To enable Sun Advanced Key Emulation mode and use these keys, press and hold **Ctrl+Shift+Alt** and then press the **Scroll Lock** key. The *Scroll Lock* LED blinks. Use the indicated keys in the following table as you would use the advanced keys on a Sun keyboard.

Table F.1: Sun Key Emulation

Sun Key (US)	PS/2 Key to Enable Sun Key Emulation
Compose	Application(1)
Compose	keypad
Power	F11
Open	F7
Help	Num Lock
Props	F3
Front	F5
Stop	F1
Again	F2
Undo	F4
Cut	F10
Copy	F6
Paste	F8
Find	F9
Mute	keypad /
Vol.+	keypad +
Vol.-	keypad -
Command (left)(2)	F12
Command (left)(2)	Win (GUI) left(1)
Command (right)(2)	Win (GUI) right(1)

(1) Windows 95 104-key keyboard.
(2) The Command key is the Sun Meta (diamond) key.

For example: For **Stop + A**, press and hold **Ctrl+Shift+Alt** and press **Scroll Lock**, then **F1 + A**.

These key combinations will work with the DSRIQ-USB module (if your Sun system comes with a USB port) as well as the Sun DSRIQ-VSN and DSRIQ-WSN modules. With the exception of **F12**, these key combinations are not recognized by Microsoft Windows. Using **F12** performs a Windows key press.

When finished, press and hold **Ctrl+Shift+Alt** and then press the **Scroll Lock** key to toggle Sun Advanced Key Emulation mode off.

Special considerations for Japanese Sun USB and Korean Sun USB keyboards (DSRIQ-USB modules only)

Japanese Sun USB and Korean Sun USB keyboards assign usage IDs for certain keys that differ from standard USB usage IDs. If DSRIQ-USB modules are attached to your Sun servers, the Han/Zen and Katakana/Hiragana keys on Japanese Sun USB keyboards and Hangul and Hanja keys on Korean Sun USB keyboards must be accessed using alternate keystrokes.

Due to these keyboard-specific differences, keyboard mapping inconsistencies may be encountered when switching between target devices using Sun DSRIQ-VSN and DSRIQ-WSN modules and target devices using DSRIQ-USB modules. These keys function normally if your Sun servers are attached to the DSR switch using a DSRIQ-VSN or DSRIQ-WSN module.

The following table lists the keyboard mapping that will take place when a DSRIQ-USB module is used in this setting.

Table F.2: PS/2-to-USB Keyboard Mappings

PS/2 Keyboard	USB Usage ID	Sun USB Keyboard	Korean Sun USB Keyboard	Japanese Sun USB Keyboard
Right-Alt	0xE6	AltGraph	Hangul	Katakana/Hiragana
Windows Application	0x65	Compose	Hanja	Compose
Hangul	0x90	N/A	N/A	N/A
Hanja	0x91	N/A	N/A	N/A
Katakana/Hiragana	0x88	N/A	N/A	Han/Zen
Han/Zen	0x35	` ~	` ~	N/A

Appendix G: Technical Support

Our Technical Support staff is ready to assist you with any installation or operating issues you encounter with your Avocent product. If an issue should develop, follow the steps below for the fastest possible service:

1. Check the pertinent section of the manual to see if the issue can be resolved by following the procedures outlined.
2. Check our web site at www.avocent.com/support to search the knowledge base or use the on-line service request.
3. Call Avocent Technical Support for assistance at (888) 793-8763. Visit the Avocent web site at http://www.avocent.com/support and click on *Support Phone Numbers* for current phone support hours.

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